



Warner Parks Bird Program

2024 PURPLE MARTIN REPORT

Introduction: Purple Martins, (PUMA) *Progne subis*, is our largest swallow and is part of a suite of species called aerial insectivores, meaning they capture their prey (large insects) on the wing. Purple Martins breed here in the summer (Figure 1) and produce just one clutch of young. Once the young have fledged, they join thousands of other martins at pre-migration roosts in the area before migrating to South America for the winter. ¹

In the eastern U.S., Purple Martins now nest almost exclusively in man-made nests such as martin gourds or houses. Given this strong association with humans and the significant decline in aerial insectivores over the past several decades, Warner Parks initiated a research project on Purple Martins in 2000 to assess martin reproductive success at numerous locations throughout the park including Warner Park Nature Center (WPNC), Percy Warner Golf Course, and the Harpeth Hills Golf Course.

The Warner Park Nature Center gourds were first installed in 2000 but did not have their first successful nest until 2010 - an indication of how important it is to be patient when attracting martins to a new breeding location.



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Scout arrival/phenology: The Purple Martin Conservation Association tracks first sightings of martins in the spring as part of the phenology of arrival to their nesting area. Each spring, we document the first arrival of Purple Martins to Warner Parks as they return from their wintering grounds in South America.

Table 1. Spring detection dates at WPNC

Year	1st Spring observed PUMA
2016	26 March
2019	26 March
2020	18 March
2021	10 March
2022	21 March
2023	08 March
2024	13 March

Nest success: Measuring nest success helps to inform reproductive indices to better understand how populations are doing over time. In this area, Purple Martins begin to build their nests of grasses, weeds, sticks, and mud in mid-May. We check nests weekly to document nesting activity, progression of the nest formation, number of eggs, nestlings, and fledglings, and band the nestlings when feasible. At the end of the season, all nest check data is submitted to the Purple Martin Conservation Association. See Table 2 for this year's results and Table 3 for results since 2000 when we began monitoring at WPNC.



Table 2. Purple Martin productivity at two locations.

Location	# gourds occupied/available	# eggs	# hatched	# fledged	# radio-tagged	# banded
Warner Park Nature Center	12/24	66	53	53	20	42
Ellington Agriculture Center	8/23	39	36	31	6	13

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Before martins leave the nest: We band and radio-tag purple martin nestlings at 20 days of age. We place bands on the left leg with a U.S.G.S Bird Banding Laboratory uniquely numbered banded and a blue colored and numbered (1-200) aluminum band on the right leg. The color bands help us to observe and identify birds after they fledge or if they return to the nesting area in subsequent years. The USGS bands help to identify the bird if they are recaptured or recovered at any location. Nestlings must be banded between 15-20 days of age when their legs are the correct size for the band and before they can fly and fledge prematurely. Given this limitation, not all nestlings are banded to ensure they do not fledge prematurely.

Solar powered Cellular Tracking Technologies HybridTags are put on the martin nestlings using a leg-loop harness design. These transmitters send a radio-signal every 5 seconds and when detected by a receiver station are shared with the Motus.org network.

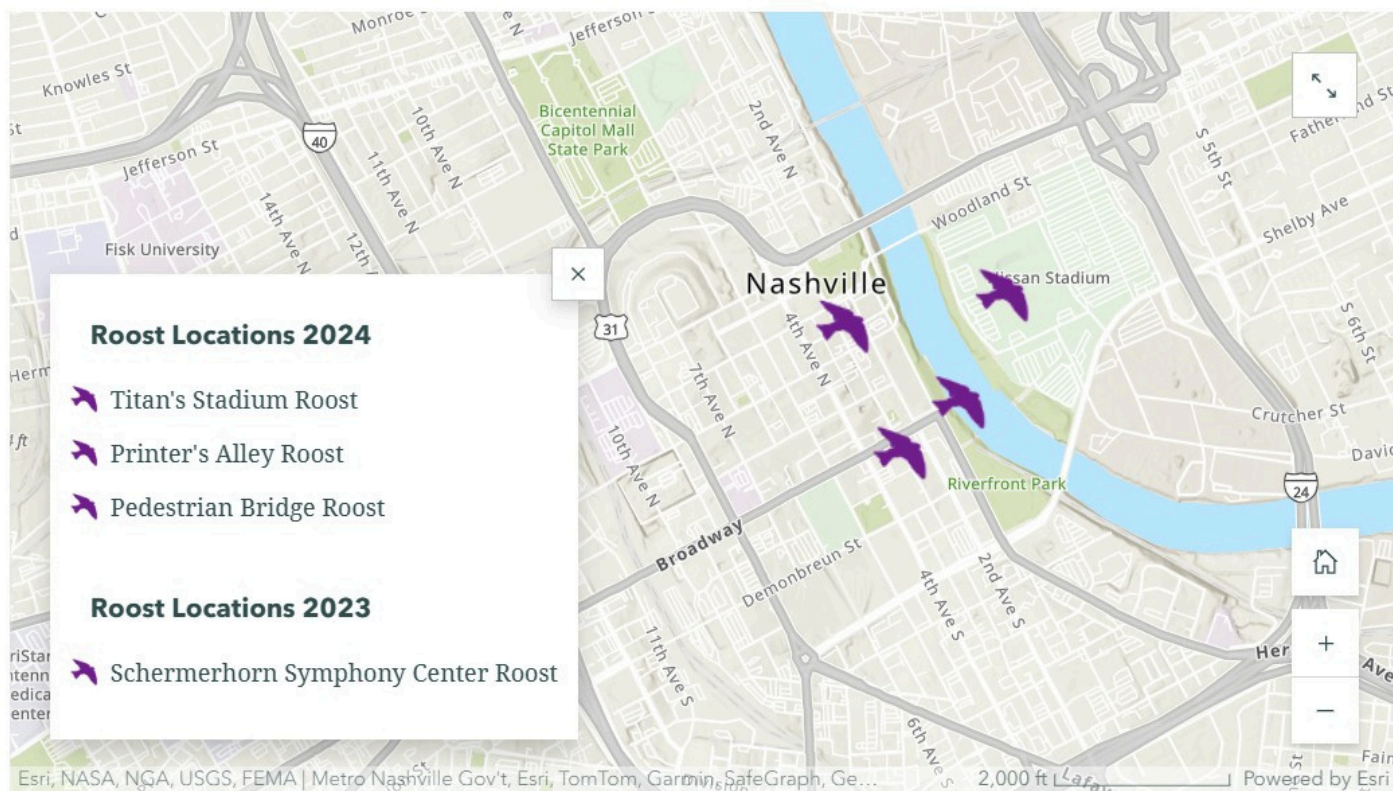


2024 Purple Martin Report

The 2024 Migration Roost: Purple Martins have historically roosted at various locations near the Cumberland River. By radio-tagging martin nestlings, we learned many of these nestlings born in the surrounding area join this big migration roost.

An action step in the Nashville Urban Bird Treaty was the formation of a Purple Martin Task Force. With the new city new administration, attempts were made in winter 2024 to launch the Purple Martin Task Force with Mayor O'Connell's office. These task force meetings were delayed until after the removal the Symphony Place trees in Spring 2024. The Symphony paid to replace the trees with young, native trees not attractive to martins (Overcup Oak).

Given this significant disturbance of the roost area, the martins did not return to the Symphony area in 2024. Instead, it took several weeks for the martins to settle into a new roost location.



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How the 2024 roost formed:

- In mid-June, the martins formed a roost in 2 trees at Old Fort Nashborough. (Estimated 5000-8000 martins but were there for only a couple of weeks).
- On 01 July, some martins continued to roost at Fort Nashborough but a week later, the roost began to shift to trees at 3rd and Church St. Numbers increased through July with an estimated 10k birds, peak around 11 July. By early August, no martins were observed at the 3rd/Church roost. The trees were significantly damaged. The Nashville Downtown Partnership did not like this location because it was difficult to clean streets and sidewalks.
- On 11 July, with martins still at 3rd and Church, the PUMAs were also roosting at Titan's Nissan Stadium across the river. Peak numbers of were 150,000+ from the end of July through 19 August. On the night of 20 August, fewer martins observed.
- During peak numbers at the Nissan stadium, the PUMAs also began roosting at the Pedestrian Bridge roost from 2022. An estimated 10,000 birds.
- 18 out of 25 radio-tagged martin nestlings from Warner Park Nature Center and Ellington Agriculture Center were detected at the roosts in Nashville, including detections from the temporary Bridgestone Tower Motus Station.
- Additionally, 2 Warner Park Purple Martins radio-tagged from 2023 returned to the area and were detected at the roost in 2024.
- The last Purple Martins were observed on 09 September 2024 by Lawson White at the Titan's Stadium with just a couple thousand birds at the Titans Stadium
- By 15 September 2024, the Titans had cut and removed damaged roost trees at the stadium. Martins continued to be observed in the area until early October.



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Warner Park Radio-tagging Summary

- 20 martin nestlings from 9 gourds were radio tagged from 11 June through 06 July
- We documented but did not band or radio-tag more nestlings because they were not the appropriate age (20 days old to attach a transmitter) or due to concern that lowering the gourds would cause premature fledgling in older nestlings.
- All radio-tagged nestlings were confirmed to have fledged. However, one radio-tagged bird was never detected by any of our receiver stations
- 12 (60%) of the radio-tagged fledglings from Warner Parks were detected at the Nashville migration roost between July – early September.
- 5 radio-tagged fledglings were ‘super foragers’, detected by at least 5 receiver stations in Middle Tennessee area.
- 2 radio-tagged birds were detected in Sewanee, TN as they began their migration south.

Ellington Agricultural Center Radio-tagging Summary

- 6 martin nestlings from 2 gourds were radio tagged on 14 June and 17 June 2024.
- We documented but did not band or radio-tag more nestlings because they were not the appropriate age (20 days old to attach a transmitter) or due to concern that lowering the gourds would cause premature fledgling in older nestlings.
- All radio-tagged nestlings were confirmed to have fledged.
- All 6 (100%) of the radio-tagged fledglings from Ellington were detected at the Nashville migration roost between July – August.
- 3 radio-tagged fledglings were super foragers, detected by at least 5 receiver stations in Middle Tennessee area.
- 1 radio-tagged martin was detected in Sewanee and Chattanooga, TN as it began their migration south.
- 1 radio-tagged martin was last detected in our area on 05 August and then on 08 September, detected flying south by receiver stations in eastern Costa Rica and 60km south in Panama in Central America. <https://motus.org/data/track?tagDeploymentId=55831>

Rehabilitated Purple Martin

In late June, Nashville Wildlife Conservation Center began rehabilitating an injured Purple Martin after it collided with a structure at the migration roost at Titan’s Nissan Stadium. After weeks of intensive rehab, we radio-tagged the martin prior to release. Success! Weeks after being released back at the stadium this bird was detected for 3 days by our Warner Park station before it headed to South America for the winter!

2024 Purple Martin Report

Team effort: From monitoring the nests to radio-tagging martins to roost observations, this was a significant team effort. Many thanks to the following:

- Nest monitoring and radio-tagging: Kathy Shaw and Joe McLaughlin
- Receiver stations: Steve Ghertner, Terry Cook, Cody Cook, Cory Holliday for receiver station assistance. Bridgestone for allowing us to place a temporary receiver station. The Nature Conservancy, the Tennessee Regional Motus Collaborative, the Nashville Zoo, Tennessee River Gorge Trust, University of Tennessee Chattanooga, Tennessee Wildlife Resources Agency, and Friends of Warner Parks/Nashville Metro Parks for their network of receiver stations throughout Middle Tennessee.
- Education and Engagement at the roost: Jenna Atma led efforts with Nashville Metro Parks and Nashville UBT/The Nature Conservancy to train 27 volunteers who engaged over 1000 people at the downtown roost. This included 45 nights with a volunteer educating in the area, 3 Purple Martin Watch Parties, and 2 Kayak trips led by Outdoor Nashville Parks and Recreation.
- Funding for the BIRD Program, radio transmitters, and receiver stations: Friends of Warner Parks and Warner Park Nature Center, the Barbara J. Mapp Foundation.



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An urban wonder bird: Purple Martins are adaptable birds with strong associations with humans. Unfortunately, and typical of aerial insectivorous birds, martin populations have declined significantly. We hope that our research and public engagement helps to inform a better understanding and compassion for these birds. We have an opportunity with the Urban Bird Treaty Program to ensure Nashville provides habitat and reduces hazards to birds such as martins while ensuring communities and businesses can thrive. Please join us in these efforts.

Media Stars: Purple Martins have captivated the attention on Nashville, an Urban Bird City. Here is a sample of media in 2024:

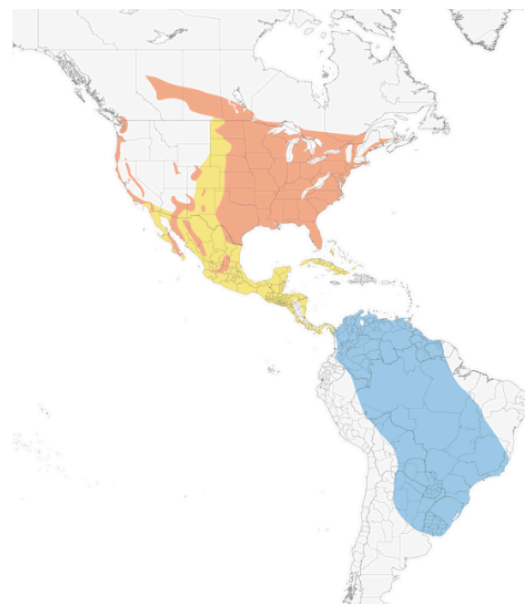
- <https://warnerparks.org/purple-martins-returning-to-nashville/>
- <https://wpln.org/post/city-will-cut-trees-near-nashville-symphony-to-evict-purple-martins-again/>
- <https://www.newschannel5.com/news/mayor-oconnell-shares-solution-that-could-fix-the-purple-martin-issue-downtown>
- <https://www.wsmv.com/2024/03/26/will-purple-martins-continue-be-problematic-nashville/>
- <https://www.wkrn.com/video/purple-martins-return-to-downtown-nashville/9864568/>
- <https://www.wkrn.com/video/purple-martins-take-over-nissan-stadium/9879696/>
- <https://www.nashvillezoo.org/our-blog/posts/nashvilles-purple-martin-phenomenon>
- <https://www.nature.org/en-us/newsroom/purple-martins-nashville-tennessee/>
- <https://www.wkrn.com/news/nissan-stadium-welcomes-purple-martins/>
- <https://sidewalknature.com/2024/08/03/purple-martins/>
- https://www.nashvillescene.com/news/slideshows/purple-martins-nissan-stadium/article_1ecc264c-58db-11ef-946d-533dc4cec690.html
- <https://www.youtube.com/watch?v=XtxAdP1o6P8>
- https://www.yahoo.com/news/nissan-stadium-welcomes-purple-martins-000216667.html?guccounter=1&guce_referrer=aHR0cHM6Ly93d3cuZ29vZ2xlLmNvbS8&guce_referrer_sig=AQAAACrt24BpWBrALyUVw3XPle2YuJ3wR0XqKRLdE4Xlx7pxhPKoPW__KTekp0hbzEFSqzQt8YSYCYBWNROxwU0aNsej6irVcN9xByFAaecFWBHn4XRr8PWxYQFb048_hwYS62NPbMfSJTg9RmYr9hu4PBVaQhIfEK7tKyT1SWmGisUG
- <https://www.wkrn.com/news/local-news/nashville/purple-martins-return-to-nashville-near-nissan-stadium/>
- <https://nashville.citycast.fm/urban-almanac/purple-martins-nashville-2024>
- <https://nashvilleurbanbirdcity.org/purple-martin-patrol/>

2024 Purple Martin Report

2024 Media continued:

- <https://nashvillebanner.com/2024/08/02/purple-martin-migration-nissan-stadium/>
- <https://www.thewoodthrushshop.com/birdnews/2024/8/2/purple-martin-roost-in-nashville>
- <https://www.wkrn.com/video/purple-martins-take-over-nissan-stadium/9879696/>
- <https://www.nashvillezoo.org/our-blog/posts/nashvilles-purple-martin-phenomenon>
- <https://www.nature.org/en-us/newsroom/purple-martins-nashville-tennessee/>
- <https://www.wkrn.com/news/nissan-stadium-welcomes-purple->
- <https://www.youtube.com/watch?v=QRmw40UrvoY>
- <https://www.instagram.com/nashvillezoo/reel/C-sbYp5uSLJ/>
- https://www.reddit.com/r/birding/comments/1eaq0g1/purple_martins_are_roosting_in_nashville/
- <https://www.msn.com/en-us/news/us/purple-martins-return-to-nashville/ar-BB1k7DFv?ocid=BingNewsVerp>
- <https://www.wsmv.com/video/2024/03/26/purple-martins-return-nashville/>
- <https://www.instagram.com/outdoornashville/p/C-DMB8uuYrN/>
- <https://nashvillebanner.com/tag/purple-martin-migration/>

Figure 1. Distribution of Purple Martins from *Birds of the World*



■ Year-round
■ Breeding
■ Migration
■ Non-Breeding

Distribution of the Purple Martin

2024 Purple Martin Report

Table 3. Warner Park Nature Center Purple Martin nest activity 2001-2023.

Year	# gourds available	# gourds with eggs	% occupancy (gourds with eggs)	# eggs	# hatched	% hatch from egg	# presumed fledged	% fledge from egg	% fledge from hatch	# radio-tagged	# banded
2000-2009	12	0	0%	0	0	0	0	0	0	0	0
2010	12	2	17%	10	9	90%	9	90%	100%	0	5
2011	12	2	17%	9	3	33%	3	33%	100%	0	3
2012	12	3	25%	18	15	83%	15	83%	100%	0	10
2013	12	0	0%	0	0	0%	0	0%	0%	0	0
2014	12	1	8%	4	4	100%	4	100%	100%	0	0
2015	12	2	17%	10	8	80%	8	80%	100%	0	8
2016	12	1	8%	3	3	100%	3	100%	100%	0	3
2017	12	2	17%	10	8	80%	8	80%	100%	0	8
2018	12	4	33%	4	4	100%	4	100%	100%	0	4
2019	12	3	25%	14	14	100%	13	93%	93%	0	14
2020	12	12	100%	58	53	91%	50	86%	94%	0	44
2021	24	12	50%	59	54	92%	51	86%	94%	6	30
2022	24	12	50%	56	47	84%	43	77%	91%	15	25
2023	24	11	46%	55	53	96%	52	95%	98%	16	32
2024	24	12	50%	66	53	80%	53	80%	100%	20	42
Totals				376	328	87%	316	84%	96%	57	228